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ALLOY REPLACES DIAMOND TRUING; NEW DRILL, GRINDER, LATHE NOTED

COMPOSITION OF DIAMOND SUBSTITUTE -- Mashinno-Traktornaya Stantsiya, No 1, Jan 50

The new VKZ metal-ceramic alloy, which eliminates the need for diamonds in the truing of grinding wheels, is composed of 97 percent wolfram carbide and 3 percent cobalt. The new truing wheel can dress grinding wheels of any material, except those employing a vulcanite bond. The wheels are now being produced by the Repair Enterprises Administration of the Ministry of Agriculture, USSR.

SELF-ADJUSTING DRILLING MACHINE -- Znaniye-sila, No 2, Feb 1950

Drilling an accurate hole in metal ordinarily requires three operations. First a drill is used, followed by a tap, and finished with a reamer. This necessitates retooling and changing the speed of rotation and feed.

Designers at the Odessa Machine Tool Building Plant have recently built a new radial drilling machine. While performing one operation, the machine prepares itself for the next one. A special hydraulic mechanism, which is connected with the tool-change mechanisms and gearshift forks, adjusts the machine for the next speed and feed. As the operator begins to retool, the speed and feed of the machine change automatically.

NEW AUTOMATIC GRINDERS FOR BLADE SECTIONS -- Znaniye-sila, No 1, Jan 1950

The efficiency of agricultural machines depends to a great extent on the quality of their cutters. The edges of blade sections should be only 20 microns thick. Millions of these sectional blades are needed yearly for harvesting machines. Until recently, blade grinding was done by hand with primitive grinding devices. Only 1,500 parts could be ground by a worker in one shift. In addition, the life of the costly abrasive disk was only 8 hours.

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Soviet engineers were the first in the world to design two automatic grinding machines for grinding and finishing blade sections.

Chief designer at the Moscow Grinder Plant, K. A. Samoylov, describes the two new grinders as being almost completely automatic. The only hand operation consists of inserting steel blanks into the machine-tool hopper.

The blanks which have been inserted in the hopper are forced automatically, by a moving mechanism, into special prismatic attachments which are mounted on a rotating table. The blank is grasped firmly by levers in the prism. Two grinding wheels are mounted above the rotating table. The blank, clamped in the prism, and the table travel under one grinding wheel where the edge of the blade is rough ground and then under the other wheel where it is finished. The levers then release the ground part and a magnetic device removes it and ejects it into a box.

The other automatic grinder for surface grinding blade sections operates on the same principle.

An electric precision-measuring unit which is mounted on both machines continuously checks the performance of the grinding wheels, and as grinding is completed, guides the wheels to the next part.

More than 200 kilograms of chips are removed from the blanks per shift. Under such operating conditions, the grinding wheels generate a great deal of heat. To protect the surface of the work piece from pitting, 300 liters of cooling liquid are used per minute.

Over 10,000 sections /per shift?/ is the productive capacity of each of these new machine tools. The consumption of expensive grinding wheels has been considerably decreased.

NEW AUTOMATIC LATHE -- Stanki i instrument, No 3, Mar 50

A new Model 1M16 single-spindle automatic lathe has been manufactured at a machine-tool plant. The purpose of this magazine automatic is to turn the external profile of bushings.

The entire cycle of machining is automatic. The lathe has a loading and magazine device from which a mechanical hand inserts the part into the clamping device of the machine. The magazine unit consists of a runner, the full loading of which gives continuous machine operation for a period of 30 minutes. The mechanical hand moves upward, takes the part from the runner, and traveling downward, inserts the part into the clamping device, centering it on the lathe spindle. As the part is put on the spindle, it is clamped by a special sliding pneumatic clamp. As the part is released, the clamp withdraws into its shank, thus freeing the ends so that the part can fall into the tray of the mechanism which carries the part out of the machine.

A door with a regulating counterweight prevents the part from slipping out of the machine and guides it into a box. The base of the drop chute is made from ribbed bar iron so that chips will not adhere to it nor interfere with the sliding of the part.

The machine has a pneumatic tailstock, the spindle movement of which is geared to the cycle of inserting and securing the part in the machine.

The Model 116 machine-tool transmission is used in the 1M16. To increase the number of spindle revolutions, the diameter of the pulley has been changed, making higher cutting speeds possible. To machine a 175-millimeter bushing with face removal from two sides, at a speed of 60 meters per minute and a feed of 1.2 millimeters per revolution, takes 30 seconds, including the loading and removal of the part from the machine.

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For high-speed tool change, a special cutting-tool holder permits high-speed insertion of a prismatic hard-alloy cutter without loss of time in its adjustment to the necessary machining diameter. A small baffle plate has been made on the front edge of the cutting tool for chip breaking.

This lathe was designed for machining bushings, but can be used also for machining any short, smooth cylindrical parts having radius or profile changes. Since the machine has only one longitudinal support it can copy profiles from a basic straight-edge master form without undercutting operations.

The 1M16 machine tool will find wide application in those branches of industry where many identical parts can be machined on a completely automatic cycle.

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